Freundlich isotherm equilibrium equastions in determining effectiveness a low cost absorbent to heavy metal removal in wastewater (Leachate) at Teluk Kitang landfill, Pengkalan Chepa, Kelantan, Malaysia

ABSTRACT

Problem Statement: Landfill site at Kg. Teluk Kitang were fully utilized in around 14 years ago. The method adopted was not fit a right landfills which do not have the bottom of the landfill liner. In the absence of this liner layer leachate seepage occurs causing so bad. The presence of leachate into the soil can interfere with clean groundwater can cause heavy metal content increased and could endanger the human health of a long period of time. Removal of heavy metals such as Iron (Fe2+), Copper (Cu2+) and Zinc (Zn2+) from leachate was studied using granular activated carbon, fly ash, limestone and granular activated carbon mixture. Methods: The adsorption isotherm is an equilibrium test group will provide data for the substance adsorbed per unit weight of adsorbent to adsorbent amount remaining in the sample solution. The graph shows the adsorption isotherms of metal removal studied by looking at the coefficient of determination, R2. The slope of the linear plot line is also a good and suitable for testing by group. Kf value and 1 / n is obtained from the equation of linear plotted by comparing the equation obtained by the equation given. Value of 1 / n can be obtained from the slope and Kf values obtained with the antilog value of log Ce. Results: Of the isotherm plots, note the value of Kf, R2 and 1 / n for Iron metals are 0.53371, 0.9842 and 0,988, for zinc 3.0123, 0.8974 and 1.7461 and copper are 0.7227, 0.3867 and 0.0791. Conclusion: These values indicate the removal of the best metal to use GAC is for iron and zinc metal to have a better adsorption capacity (Kf value is greater).

Keyword: Leachate; Adsorption isotherm; Iron; Zinc; Copper; Fly ash